

What is claimed is:

Claim 1. A low attenuation optical fiber comprising:

a dispersion (D) of 2.0 to 14.0 ps/nm/km in absolute value over a wavelength band of 1530 to 1565nm,

a transmission loss which remains no more than 0.25dB/km at a wavelength of 1520nm under the standard atmospheric conditions,

wherein said transmission loss at 1520nm does not exceed 0.25dB/km after being exposed, for a sufficient period, to an atmosphere consisting substantially of hydrogen under ordinary atmospheric pressure at ordinary temperature,

Claim 2. The low attenuation optical fiber according to Claim 1, further comprising:

a dispersion slope (S) of no more than 0.15 ps/nm/km over a wavelength band of 1530 to 1565nm,

a polarization mode dispersion (PMD) of no more than 0.5 ps/ $\sqrt{\text{km}}$; and,
a loss increase of no more than 40dB/m at a wavelength of 1550nm as coiled in a diameter of 20mm,

Claim 3. The low attenuation optical fiber according to Claim 1, further comprising:

an effective area (A_{eff}) of no more than 90 μm^2 at a wavelength of 1550nm,

Claim 4. The low attenuation optical fiber according to Claim 1, further comprising:

a dispersion slope of 0.04 ps/nm/km to 0.08 ps/nm/km over a wavelength band of 1530 to 1565nm,

a dispersion of 6ps/nm/km 10ps/nm/km in absolute value, and
an effective area of 40 μm^2 to 70 μm^2 at a wavelength of 1550nm,

Claim 5. The low attenuation optical fiber according to Claim 1, further comprising:

an effective area of no more than 90 μm^2 at a wavelength of 1550nm,

Claim 6. The low attenuation optical fiber according to Claim 2, further comprising

a dispersion slope of 0.04 ps/nm/km to 0.08 ps/nm/km over a wavelength band of 1530 to 1565nm,

a dispersion of 6ps/nm/km 10ps/nm/km in absolute value, and

an effective area of $40\mu\text{m}^2$ to $70\mu\text{m}^2$ at a wavelength of 1550nm,

Claim 7. A low attenuation optical fiber comprising
a dispersion (D) of 2.0 to 14.0 ps/nm/km in absolute value over a
wavelength band of 1530 to 1565nm,
a transmission loss which remains no more than 0.25dB/km at a
wavelength of 1520nm under the standard atmospheric conditions,
wherein said transmission loss at 1550nm does not exceed 0.25dB/km
after being exposed, for a sufficient period, to an atmosphere consisting substantially
of hydrogen under ordinary atmospheric pressure at ordinary temperature,

Claim 8. The low attenuation optical fiber according to Claim 7, further comprising:
a dispersion slope (S) of no more than 0.15 ps/nm²/km over a wavelength
band of 1530 to 1565nm,
a polarization mode dispersion (PMD) of no more than 0.5 ps/ $\sqrt{\text{km}}$; and,
a loss increase of no more than 40dB/m at a wavelength of 1550nm as
coiled in a diameter of 20mm,

Claim 9. The low attenuation optical fiber according to Claim 7, further comprising:
an effective area (A_{eff}) of no more than $90\mu\text{m}^2$ at a wavelength of
1550nm,

Claim 10. The low attenuation optical fiber according to Claim 7, further comprising:
a dispersion slope of 0.04 ps/nm/km to 0.08 ps/nm/km over a wavelength
band of 1530 to 1565nm,
a dispersion of 6ps/nm/km 10ps/nm/km in absolute value, and
an effective area of $40\mu\text{m}^2$ to $70\mu\text{m}^2$ at a wavelength of 1550nm,

Claim 11. The low attenuation optical fiber according to Claim 8, further comprising:
an effective area of no more than $90\mu\text{m}^2$ at a wavelength of 1550nm,

Claim 12. The low attenuation optical fiber according to Claim 8, further comprising
a dispersion slope of 0.04 ps/nm/km to 0.08 ps/nm/km over a wavelength
band of 1530 to 1565nm,

a dispersion of 6ps/nm/km 10ps/nm/km in absolute value, and
an effective area of $40\mu\text{m}^2$ to $70\mu\text{m}^2$ at a wavelength of 1550nm,

Claim 13. A method of hydrogen-proof treatment for low-attenuation optical fibers,
wherein said hydrogen-proof treatment is exposure to an atmosphere
consisting substantially of deuterium at ordinary temperature and takes place after a
fiber drawing process.